We claim:

1. A method for processing a TiN layer on a substrate, comprising:

(a) providing a substrate;

(b) depositing a TiN layer with a halogen containing titanium source gas and a nitrogen source gas on said substrate in a first process chamber; and

(c) subjecting the TiN layer to a plasma treatment involving a N-containing gas.

2. The method of claim **1** wherein said nitrogen source gas is NH_3.

3. The method of claim **1** wherein said halogen containing titanium source gas is $TiCl_4$.

4. The method of claim **1** wherein said deposition is a chemical vapor deposition.

5. The method of claim **1** wherein the plasma treatment is performed ex-situ in a second process chamber.

6. The method of claim **1** wherein said plasma treatment comprises a N-containing gas flow rate of 500 to 2000 sccm, a chamber temperature between about 500^oC and 700^oC, a RF power from about 400 Watts to 1000 Watts, a chamber pressure of about 1 to 10 Torr, and a process time of at least 30 seconds.

7. The method of claim **6** wherein said N-containing gas is one of N_2, NH_3, or N_2H_4.

8. The method of claim **7** further comprised of adding H_2 to N_2 during the plasma treatment.

9. The method of claim **1** further comprised of depositing a metal layer on the TiN layer after the plasma treatment and planarizing to form a contact.

10. A method for processing a TiN barrier layer on a substrate, comprising:

(a) providing a substrate with an opening formed therein, said opening has sidewalls, a top, and a bottom;

(b) depositing a TiN layer with a halogen containing titanium source gas and a nitrogen source gas in a first process chamber, said TiN layer is formed by a CVD process and forms an essentially conformal layer on the substrate and on the sidewalls and bottom of said opening;

(c) subjecting the TiN layer to a plasma treatment involving a N-containing gas; and

(d) depositing a metal layer on the plasma treated TiN layer that fills the opening.

11. The method of claim **10** further comprised of performing a planarization that makes the TiN layer and metal layer coplanar with the top of the opening.

12. The method of claim **10** wherein said substrate is comprised of a top layer which is a dielectric layer.

13. The method of claim **10** wherein said halogen containing titanium source gas is $TiCl_4$ and said nitrogen source gas is NH_3.

14. The method of claim **10** wherein the plasma treatment is performed ex-situ in a second process chamber.

15. The method of claim **10** wherein said plasma treatment comprises a N-containing gas flow rate of 500 to 2000 sccm, a chamber temperature between about 500°C and 700°C, a RF power from about 400 Watts to 1000 Watts, a chamber pressure of about 1 to 10 Torr, and a process time of at least 30 seconds.

16. The method of claim **15** wherein said N-containing gas is one of N_2, NH_3, or N_2H_4.

17. The method of claim **16** further comprised of adding H_2 to N_2 during the plasma treatment.

18. The method of claim **10** wherein the opening is a contact hole formed above a silicide region on a transistor.

19. A method of forming a MIM capacitor, comprising:

(a) providing a substrate with a dielectric layer formed thereon;

(b) forming a contact hole in said dielectric layer, said contact hole has sidewalls, a top, and a bottom;

(c) depositing a TiN layer with a halogen containing titanium source gas and a nitrogen source gas in a first process chamber, said TiN layer is formed by a CVD process and forms an essentially conformal layer on the dielectric layer and on the sidewalls and bottom of said contact hole;

(d) subjecting the TiN layer to a plasma treatment involving a N-containing gas;

(e) etching back the TiN layer to a recessed depth within the contact hole;

(f) depositing an insulating layer on the recessed TiN layer; and

(g) depositing a metal layer on the insulating layer.

20. The method of claim **19** wherein the dielectric layer is comprised of SiO_2 or a low k dielectric material such as fluorine doped SiO_2, carbon doped SiO_2, a polysilsesquioxane, a poly(arylether), fluorinated polyimide, or benzocyclobutene and has a thickness of about 2000 to 20000 Angstroms.

21. The method of claim **19** wherein said halogen containing titanium source gas is $TiCl_4$ and said nitrogen source gas is NH_3.

22. The method of claim **19** wherein the TiN layer has a thickness of about 100 to 500 Angstroms.

23. The method of claim **19** wherein the plasma treatment is performed ex-situ in a second process chamber.

24. The method of claim **19** wherein said plasma treatment comprises a N-containing gas flow rate of 500 to 2000 sccm, a chamber temperature between about 500°C and 700°C, a RF power from about 400 Watts to 1000 Watts, a chamber pressure of about 1 to 10 Torr, and a process time of at least 30 seconds.

25. The method of claim **24** wherein said N-containing gas is one of N_2, NH_3, or N_2H_4.

26. The method of claim **25** further comprised of adding H_2 to N_2 during the plasma treatment.

27. The method of claim **19** wherein the TiN layer is recessed to a depth of about 0 to 2000 Angstroms below the top of the contact hole.

28. The method of claim **19** wherein the insulating layer is a high k dielectric layer comprised of Ta_2O_5, TiO_2, Al_2O_3, ZrO_2, HfO_2, Y_2O_3, and La_2O_3 or a silicate, nitride, or oxynitride of Ti, Ta, Al, Zr, Hf, Y, and La.

29. The method of claim **28** further comprised of annealing the insulating layer before the metal layer is deposited by a process comprising an oxygen ambient.

30. The method of claim **19** wherein the metal layer is comprised of copper.